

had not been returned to the Asiatic Museum along with the rest of the skeleton, through the *inadvertence* of Dr. Falconer."

Mr. Blyth, in the *brochure* dated the 28th December 1870, which was distributed about the streets of London, says:—"In my presence he [Dr. Falconer] then took to pieces the deformed specimen originally described by me; and, moreover, he took the skull away with him, which I never saw afterwards."

Mr. Grote, the secretary of the Society at that period, tells me that there is no record of this fact in the archives of the Society.

Dr. Anderson states:—"I will also observe that this specimen generally has a decided appearance of having been partially *macerated*, but not to any great extent."

Thus we see that, according to Mr. Theobald, the tortoise was taken away and buried; according to Blyth, it was taken to pieces in his presence; Dr. Anderson thinks it has been macerated; Mr. Theobald says the bones have the names written on them by Dr. Falconer or his assistant, Dr. Walker; and Dr. Anderson says it has the names on the sternal plates in the handwriting of Dr. Falconer, and that the skull and remainder of the skeleton are absent. They all agree in the skull being absent, and upon this they base the whole theory of the skull being retained by Dr. Falconer. I can only say that the skull in the British Museum certainly has no appearance of ever having had any thing written upon it by any person, or of having been buried, and that it shows no indication of any deformities as suggested by Mr. Blyth.

The knowledge of the carapace and skull of the genus *Scapia* shows that the peculiarity in the form of the skull is a proper character of the animal, and not a deformity as Mr. Blyth suggests.

XL.—On *Testudo Phayrei*, Theob. & Dr. Gray.

By JOHN ANDERSON, M.D., F.L.S., F.Z.S., &c.

HAD not Dr. Gray's name been attached to the article that appeared in the *Ann. & Mag. of Nat. Hist.* for August last, I would have taken no notice of it; but as anything written by Dr. Gray on a zoological question should carry some weight with it, I have to request that you will insert this reply to Dr. Gray's strictures.

Apart from the question of *Trionyx Phayrei*, I might have left the merits of the other charges which Dr. Gray has brought against me to the unbiased judgment of your readers,

had I thought that they had all the facts before them and were in possession of my papers. But as it is highly improbable that they are so situated, I shall answer and dispose of Dr. Gray's personalities with the summary brevity which such unfounded statements as those indulged in by him with regard to my work merit from me. It seems to me a degradation of science to allow personal feeling in any way to interfere with and bias the judgment in questions that can be decided only by accurate observation and reason.

The following are the circumstances which have elicited Dr. Gray's remarks. In some short papers contributed by me to the 'Proceedings of the Zoological Society of London' I had occasion fairly to criticise Dr. Gray's definition of the genus *Macroxus* and his division of the squirrels into two genera, *Sciurus* and *Macroxus*, and to suggest that his name for a new genus of Cetacea, which I accepted, should be slightly altered to make it accord with the rules that regulate the formation of Latin words. I also stated that it was my opinion that *Trionyx Jeudii*, Gray, was the *Trionyx Phayrei*, Theobald. Had I stepped out of my way to make these observations, without having any thing to say on these animals, I should certainly have followed a most objectionable course; but as I had some remarks to offer on each, I hold that I did not overstep the bounds of fair criticism.

With regard to *T. Phayrei* (for I will follow the order that Dr. Gray has adopted in his remarks, his article not being confined to the consideration of this tortoise), the specimen which formed the subject of my observations is a specimen which, on the very best authority, I was informed was an adult of the species; so that Dr. Gray was wrong in concluding that I had no better means of determining the species than Theobald's description afforded.

Dr. Gray says that my figure of the sternum of *T. Phayrei* does not accord with my remark that the chief differences that separate it from *T. gangeticus* are the less developed character of the osseous portion of the sternum and the relatively finer character of its sculpturing on both aspects, and proceeds to observe that my drawing represents large and well-developed callosities, not in the slightest degree resembling the small, narrow, linear, lateral callosities found in *Trionyx subplanus* as described by Theobald, but also having large triangular anal callosities and the odd osseous semicircular bone in the front of the sternum covered with a lunate callosity, not even found in *Trionyx gangeticus*; and as the result of these considerations, Dr. Gray arrives at the conclusion that the specimen I described had no connexion with *T. Phayrei*, Theobald.

Now, after another examination of my materials, I repeat the statement that my specimen is distinguished from *T. gangeticus* by the *osseous plates* of its sternum being considerably less developed than in that species, and by the relatively finer character of its sculpturing on both aspects. In *T. Phayrei* the abdominal expansions of the lateral plates of the sternum of the adult are widely separated from each other by a broad cartilaginous area almost as well marked as in Dr. Gray's figure of the so-called *Dogania*, and measuring 4" 3^m in its greatest width. It is the presence of this large cartilaginous space, combined with the less developed character of the osseous portion of the sternum as compared with *T. gangeticus*, that led Theobald to state that the sternum presents a remarkable difference in the development of the *bony plates* as contrasted with *T. gangeticus*, and that in general characters it more nearly approaches to *Dogania subplana*. Dr. Gray has become confused between the tubercular callous surfaces of the sternal plates and the plates themselves of *T. Phayrei*, and makes it appear as if Theobald described the former as resembling those of *T. subplanus*; whereas Theobald's words are distinctly these, that the development of the *bony plates* of the sternum of *T. Phayrei* approaches to *T. subplanus*, which is the character of my specimen in respect of its sternal osseous plates; and he does not, as Dr. Gray states, mention any small linear callosities as characteristic of his *T. Phayrei*. Mr. Theobald, moreover, does not compare the tubercular callous surfaces to the small linear callosities of *Dogania* beyond saying that in *T. Phayrei* the former are less developed and more feebly sculptured than in any of its allies; but as a matter of fact he describes them as marginal, without giving any details as to their distribution. How Dr. Gray reconciles this plain statement of fact with his interpretation of it, I leave him to explain. In my specimen the tubercular callous surfaces are coextensive in their distribution with the antero-posteriorly united lateral plates and the surface of the anals and of the odd osseous plate; but as Theobald has not given any detailed account of the distribution of these surfaces beyond what I have quoted from his description, I hold that, under the circumstance that he recognized in my specimen *T. Phayrei*, I did not err in regarding it as an adult in which the marginal granulations had become visible all over the surface of the lateral, anal, and odd osseous plates. Dr. Gray confounds "linear" with "marginal," whereas the latter term embraces the margins of an object; and when that object has an irregular outline, the former term, "linear," cannot be applied to it. If Dr. Gray means by "linear" the straight sides of a square, or

even the rounded outline of a circle, it appears to me that the more appropriate term would be "marginal." Calmly estimating the value to be attached to the facts as I have now stated them, I hold that I am entitled to consider that my specimen is an adult *Trionyx Phayrei*, and that as its skull, after carefully comparing it with the skull of *Trionyx Jeudii*, is found to agree with the latter in its structural details, I am forced to accept the conclusion that Gray's *T. Jeudii* is only *T. Phayrei* under another name.

Dr. Gray, after stating that he is aware that the sternal callosities of *Trionyx* change much during growth, again introduces the assertion that Mr. Theobald had remarked that his *T. Phayrei* had the lateral linear callosities of *T. subplanus*, a statement which I do not find, as I have already observed, in any description of Theobald's relating to *T. Phayrei*. How is this discrepancy to be reconciled?

I am perfectly aware that Mr. Theobald does not describe any anal callosities; but I have given such details regarding the callosities and the adult characters of the species as have enabled Dr. Gray, notwithstanding his assertion that I deal only in generic characters, to refer it to the genus *Landemania* and to the species *perocellatus*—by some process of mental legerdemain, if he is consistent in saying that I have not given any specific characters!

At that point in his article where he arrives at the conclusion that the specimen of *T. Phayrei* described by me has no affinity with *T. Phayrei*, Theobald, Dr. Gray unconnectedly diverges to consider my views on the genus *Macroxus*, Cuvier, as accepted by him, and, having stated his views on that subject, betakes himself to *T. Jeudii*, from the consideration of which he again returns to the charge regarding *T. Phayrei*, associating with it some remarks regarding his estimate of the state of science in the Imperial Museum of Calcutta, with a notice of my official position in the capital of India. I shall follow Dr. Gray in his ramble, and first consider his statements regarding the squirrels.

Dr. Gray, in adopting the genus *Macroxus*, does so, to use his own words, "as it is desirable to *separate the squirrels with simple ears*;" and he defines the genus as follows:—"Head moderate, short; nose rounded; ears ovate, covered with short adpressed hairs; front edge of the cutting-teeth compressed, smooth. Limbs free. Tail as long as or longer than the body and head, covered with long spreading hair." And the genus *Sciurus* as follows:—"Ears tufted. Head broad; muzzle short. Feet hairy at the heels. Front upper molar small or often wanting." Dr. Gray says I objected to the

genus *Sciurus* being separated into genera by organic characters, such as the shape of the skull and pencilling of the ears. Will Dr. Gray point out where I made such a statement, and will he indicate one single structural character he has enumerated in either of the foregoing definitions that is of the slightest value as such? The character on which Dr. Gray places so much reliance is the absence or presence of a tuft of hair on the ear—a character, I submit, of the most unreliable nature, and subject to every possible amount of variation, even on Dr. Gray's own showing. The relative length of the tail to the body is another character that finds favour with Dr. Gray; but every anatomist is aware that the number of caudal vertebræ is very liable to vary in individuals of the same species. *Macacus lasiotus* should be a warning to Dr. Gray not to place his faith in tails; for they sometimes lead to tales of sad misfortunes in zoology and to most erroneous conclusions. To structural characters properly so called there is not the faintest allusion in Dr. Gray's definition of the above genera, if I exclude a passing reference to the smooth compressed incisors, which Dr. Gray calls cutting-teeth, and to the unstable character of a first molar that is often wanting. Neither do these definitions contain any reference whatever to the skulls, nor does Dr. Gray describe the skulls under the species; yet he counsels me to study structural characters. I have critically gone over every Asiatic squirrel in the British Museum, skins and mounted specimens, to which I believe Dr. Gray refers when he speaks "*of a large series of species, including a large collection of specimens;*" and I have carefully examined the extensive collection of *species and specimens of squirrels* in this museum, and have removed the skull from each species; so that I have had ample opportunities of judging whether any importance is to be attached to Dr. Gray's character of the tufting of the ears in dividing the Asiatic squirrels; and I unhesitatingly say that the conclusion I have arrived at is that there is not. With regard to the lineation of the squirrels, all that I said was, that the Asiatic squirrels, for convenience' sake, without any subdivision of the genus *Sciurus* into genera, as Dr. Gray would seem to think I had suggested should be done, may be grouped as the simply grizzled squirrels, dorsally, laterally, and ventrally banded squirrels. Dr. Gray characterizes this as a retrograde proposal; but in his own Synopsis of his so-called Asiatic *Macroxi*, Dr. Gray divides them on similar principles, selecting the longitudinal streaks as his sole guide, with the single exception of one species founded upon the length of its tail. I hold that my arrangement is in advance of Dr. Gray's, who was unaware of

the existence of a longitudinally *belly-banded* group of squirrels; but I am aware that mere external characters are only of value as a means of classifying animal forms preliminary to an extended knowledge of persistent structural modifications.

Dr. Gray on two occasions insinuates that I have described my specimens from native drawings—a suggestion to which I give an unqualified contradiction. But, whatever may be the faults in perspective drawing by native artists, they are capital workers at detail, when properly supervised; and Dr. Gray himself bore witness, in past years, to their accuracy, when, on the faith of the correctness of their representations, he, in his 'Illustrations of Indian Zoology,' founded many species on native drawings; but no Indian zoologist requires to have recourse to them, as he can usually procure the living or recently dead specimens.

With regard to *T. Jeudii*, the next subject animadverted on by Dr. Gray, this species was described by him from a single skull, without his knowing any thing of the carapace or sternum. I have already mentioned, in its proper place, that this skull agrees in every particular with the skull of *T. Phayrei*. The central longitudinal ridge across the front of the concave alveolar surface of the lower jaw in my specimen is, as was to be expected in such a large individual, more strongly developed than in Gray's type. Dr. Gray regrets that I did not show him the skull of *T. Phayrei*, a regret which I share with him; for if he had seen the skull, he would doubtless have been convinced of their identity, and the readers of this Journal would have been spared this unpleasant discussion. If my visit to London had not been so short and hurried, Dr. Gray would have seen the skull; but I was quite competent, with the skull of *T. Jeudii* before me and that of *T. Phayrei* in my hand, to decide whether the two were distinct.

It is not my intention to follow Dr. Gray in his estimate of the state of science in the Imperial Museum, beyond remarking that it seems to me that the opinion of a single man, unsupported by unprejudiced evidence, is powerless to affect its reputation.

Dr. Gray finds fault with my measurements; but his misunderstanding of the formulæ "''' does not rest with me, especially as Dr. Gray was formerly in the habit of using the same formulæ for his measurements; and in verification of this I refer to pp. 24–58 of the 'Proceedings of the Zoological Society of London' for 1848, where he uses the foregoing formulæ and inches in the same line. This is an instructive example of the character of Dr. Gray's criticism.

From the subject of measurements Dr. Gray suddenly diverges to make the following observation. Again referring to my paper on *Trionyx Phayrei*, he says, "the sternum is thus described:—'Seven osseous plates, of which five are visible and granular;'" and, seizing on the word "seven," he either believes that I was ignorant of the elementary fact of the number of *plates* that compose the sternum of the tortoise, or twists my words to favour an hypothesis pleasant to himself. He makes the very just supposition that I meant the *nine* sternal bones: but this quibble is unworthy of Dr. Gray; for he had only to look at my figure and he would have discovered the explanation of my using the word *seven*—the transverse suture of the lateral plates being obliterated, the two pairs in this adult specimen being externally resolved into one pair, so that, as I have already observed, only *seven* distinct osseous plates exist. In describing things as they are, it is quite uncalled-for to enter into the first principles of things as they have been.

I regret having encroached so much on your valuable space, and the wandering character of this note, which has been induced, however, by the digressions that distinguish Dr. Gray's article to which this is in reply.

Calcutta, Sept. 16, 1871.

XLI.—*Parasites of the Sponges.* By H. J. CARTER, F.R.S. &c.

MY DEAR DR. FRANCIS,

I hope soon to send you an illustrated paper on the Parasites of Sponges, beginning with Dr. Bowerbank's *Stematumenia*, which, so far as this author's specimen of "fibro-membranous tissue" goes (Brit. Spong. pl. xii. figs. 256 & 260; Annals, 1845, vol. xvi. pl. 14. fig. 1) is no more a sponge, or part of one, than his so-called *Halypysema*. The latter, as you know, I have long since shown in the 'Annals' to be a Foraminifer, dressing itself out in spicules after the manner of the jackdaw with peacock's feathers, but probably not for the same purpose; and the fibre of the former, illustrative of the so-called "fibro-membranous tissue" in *Stematumenia*, I shall soon show to be an Alga, and probably an *Oscillatorium*, which, from its frequently infesting sponges of different kinds in all quarters of the globe, I propose to name "*Spongiophaga communis*."

Schmidt (in 1862, Spong. Adriat., and especially in 1864, Suppl.), after having given a great deal of attention to these